



Science Toolkit: Grade 5 Objective 1.B.1.a

Student Handout: Science: Grade 5 Objective 1.B.1.a

Standard 1.0 Skills and Processes

Topic B. Applying Evidence and Reasoning

Indicator 1. Seek better reasons for believing something than "Everybody knows that..." or "I just know" and discount such reasons when given by others.

Objective a. Develop explanations using knowledge possessed and evidence from observations, reliable print resources, and investigations.

Selected Response (SR) Item

Question

Use the passage '[The Greenhouse Effect](#)' to answer the following.

How would Earth most likely change if the amount of greenhouse gases continued to increase?

- A. Glacier size would increase.
- B. Air pollution would decrease.
- C. Ocean levels would decrease.
- D. Global temperatures would increase.

Correct Answer

D. Global temperatures would increase.

Question

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Handouts

The Greenhouse Effect

The greenhouse effect is the rise in temperature that the Earth experiences because certain gases in the atmosphere (water vapor, carbon dioxide, nitrous oxide, and methane, for example) trap energy from the sun. Without these gases, heat would escape back into space and Earth's average temperature would be about 60°F colder. Because of how they warm our world, these gases are referred to as greenhouse gases.

Most greenhouses look like a small glass house. Greenhouses are used to grow plants, especially in the winter. Greenhouses work by trapping heat from the sun. The glass panels of the greenhouse let in light but keep heat from escaping. This causes the greenhouse to heat up, much like the inside of a car parked in sunlight, and keeps the plants warm enough to live in the winter.

Greenhouse gases in the atmosphere behave much like the glass panes in a greenhouse. Sunlight enters the Earth's atmosphere, passing through the blanket of greenhouse gases. As it reaches the Earth's surface, land, water, and biosphere absorb the sunlight's energy. Once absorbed, this energy is sent back into the atmosphere. Some of the energy passes back into space, but much of it remains trapped in the atmosphere by the greenhouse gases, causing our world to heat up.

Once, all climate changes occurred naturally. However, during the Industrial Revolution, we began altering our climate and environment through agricultural and industrial practices. The Industrial Revolution was a time when people began using machines to make life easier. It started more than 200 years ago and changed the way humans live. Before the Industrial Revolution, human activity released very few gases into the atmosphere, but now through population growth, fossil fuel burning, and deforestation, we are affecting the mixture of gases in the atmosphere.

Since the Industrial Revolution, the need for energy to run machines has steadily increased. Some energy, like the energy you need to do your homework, comes from the food you eat. But other energy, like the energy that makes cars run and much of the energy used to light and heat our homes, comes from fuels like coal and oil—fossil fuels. Burning these fuels releases greenhouse gases.

Greenhouse Effect

"The Greenhouse Effect." Courtesy: United States Environmental Protection Agency.